

CLAIMS

1. A view angle control sheet characterized in that lens portions having trapezoidal shapes in cross section are arranged at predetermined intervals, a wedge-shaped portion between the lens portions adjacent to each other is filled with the same material as the lens portion or with a material different from the lens portion, the wedge-shaped portion has a bottom surface on a screen image side while having a leading edge on an observer side, and the following relationship is held at least between a refractive index N_2 of a material constituting a slope portion of the wedge-shaped portion and a refractive index N_1 of a material constituting the lens portion:

$$N_2 \leq N_1.$$

2. A view angle control sheet according to claim 1, characterized in that an angle θ (degree) formed by the slope portion and a normal line of a light beam outgoing plane exists in the following range:

$$3 \leq \theta \leq 20.$$

3. A view angle control sheet according to claim 2, characterized in that the following relationship is held further between the refractive indexes N_1 and N_2 :

$$0.8N_1 \leq N_2 \leq 0.98N_1.$$

4. A view angle control sheet according to claim 1 or 2,

characterized in that the following relationship is held still further between the refractive indexes N1 and N2:

$$N1 - 0.01 \leq N2$$

5. A view angle control sheet according to any one of claims 1 to 4, characterized in that, when a ratio of the refractive indexes N1 and N2 is $N2/N1 = R$, the following relationship is held further in the angle θ (degree) formed by the slope portion of the wedge-shaped portion and the normal line of the light beam outgoing plane:

$$-0.01 < R - \cos\theta < 0.002.$$

6. A view angle control sheet according to any one of claims 1 to 5, characterized in that a cross-sectional shape of the wedge-shaped portion is a substantial isosceles triangle.

7. A view angle control sheet according to any one of claims 1 to 5, characterized in that one of angles formed by two slopes of the wedge-shaped portion and the normal line of the light beam outgoing plane is larger than the other.

8. A view angle control sheet according to any one of claims 1 to 7, characterized in that the slope portion has a curved cross-sectional shape and/or a polygonal-line cross-sectional shape such that the screen image side differs from the observer side in an angle formed by the slope portion and an observer side surface.

9. A view angle control sheet according to any one of claims 1 to 8, characterized in that the wedge-shaped portion has a light beam absorption effect..

10. A view angle control sheet according to any one of claims 1 to 9, characterized in that light beam absorption particles are added to the wedge-shaped portion.

11. A view angle control sheet according to claim 10, characterized in that an average particle size of the light beam absorption particles is at least 1 μm and the average particle size is not more than two-thirds of a width of the bottom surface.

12. A view angle control sheet according to claim 10 or 11, characterized in that an addition amount of the light beam absorption particle ranges from 10 to 50 % by volume.

13. A view angle control sheet according to any one of claims 1 to 12, characterized in that a function of any one of AR, AS, AG, and a touch sensor or a plurality of functions thereof are imparted to at least one surface side.

14. A display device characterized in that a view angle control sheet according to any one of claims 1 to 13 is bonded.

15. A display device characterized in that a view angle

control sheet according to any one of claims 1 to 13 is arranged in a crosswise stripe.

16. A display device characterized in that one view angle control sheet according to any one of claims 1 to 13 is laminated on the observer side of a screen image source or two view angle control sheets according to any one of claims 1 to 13 are laminated the observer side of the screen image source while being substantially orthogonal to each other.

17. A display device according to claim 16, characterized in that the width of the bottom surface is not more than $1/1.5$ of a size of one pixel.